

USSR

UDC: 621.372.632

AL'BATS, M. Ye., BURMISTROV, I. N., ORLIK, I. Ya., SHERSTNEV, I. N.

"A Non-Hunting Device for Automatic Frequency Control"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 28, 1970, Soviet Patent No 280564, Class 21, filed 23 Jan 68, p 45

Abstract: This Author's Certificate introduces a non-hunting device for automatic frequency control which contains a mixer whose output is connected to the input of a narrow-band channel consisting of a narrow-band amplifier, discriminator and frequency control unit. The device also includes a wide-band channel which contains a wide-band amplifier, discriminator, frequency control unit and oscillator. As a distinguishing feature of the patent, tracking precision is improved by connecting the output of the narrow-band channel to the frequency control unit in the wide-band channel.

Burn Studies

USSR

UDC 617-001.17-008.939.6

KAMAYEV, M. F., Prof., and ORLIK, V. A., Docent, Chair of Faculty Surgery,  
Faculty of Pediatrics and Stomatology, L'vov Medical Institute L'vov

"Disturbances of Protein Metabolism in Patients With Burns"

Moscow, Klinicheskaya Meditsina, Vol 49, No 4, Apr 71, pp 83-88

Abstract: A study carried out on 45 patients with deep burns covering more than 10% of the body surface indicated that the protein metabolism of the patients was disturbed to a considerable extent. This was manifested by a decrease in the total content of protein in the blood, development of dysproteinemia, and a raised elimination of total  $N_2$ , amine  $N_2$ , and tyrosine with the urine. The increased elimination of amine  $N_2$  and tyrosine indicated that in addition to an increase in the decomposition of protein in the organism and decrease in its synthesis marked disturbances in the enzymatic oxidation of amino acids had taken place. The results showed that the amount of tyrosine eliminated could be used as one of the indices of deviations from normal of metabolic and enzymatic processes in the organism and also as a measure of the extent to which the therapeutic methods applied had been effective. Administration of synthetic hormones with anabolic action (USSR 1/2

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KAMAYEV, M. F., Klinicheskaya Meditsina, Vol 49, Apr 71, pp 83-88

metandrostenolone and Hungarian nerobol) had a favorable effect on the protein metabolism of the patients.

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USSR

UDC: 681.327.66

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BEREZIN, A. S., VAGANOV, V. I., KUZ'MIN, V. A., MOCHALKINA, O. R., ONI-SHCHENKO, Ye. M., ORLIKOVSKIY, A. A., PERSHENKOV, V. S., Moscow "Order of the Red Banner of Labor" Engineering Physics Institute

"An Integrated Thyristor Memory Element"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 20, Jul 72, Author's Certificate No 343299, Division G, filed 7 Oct 70, published 22 Jun 72, p 174

Translation: This Author's Certificate introduces an integrated thyristor memory element which contains a thyristor with longitudinal structure, and a recording readout transistor connected by its collector to the P-base of the thyristor, and by its base through a resistor to the word recording input. As a distinguishing feature of the patent, the degree of integration is increased, and the interference immunity and recording and readout speed are increased by connecting the readout transistor emitter to the thyristor emitter, and also through a resistor to the word readout input, and by connecting the base of the readout transistor to the zero-potential line.

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ORLIKOVSKIY, A.A.

Microelectronics

MICROELECTRONICS

JPRS 57313  
25 October 1972

Excerpts from Russian-language book edited by F. V. Lukin:  
"Mikroelektronika", No. 5, 1972, Sovetskoye Radio Publishing House,  
Moscow, UDC 621.384.921.356.6-181.5.

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- A -

(I - USSR - F)

This article concerns questions of constructing integrated internal memories on implementing the methods of initial uniform subsystems. The article examines methods of initial division for uniform subsystems of the internal memory structure with centralized and distributed control. The article cites a comparative analysis of different methods of constructing an internal memory based on speed of performance and required power. The article examines the characteristics of the structure of integrated subsystems for an internal memory with distributed control. On the basis of the comparative analysis of different types of memory cells cited in the article the best circuit for the cell is selected. The structure and the theoretical circuit is given for the memory subsystem developed for integrated execution. Based on the results of the analysis and the experiment, the basic parameters of the integrated internal memory are evaluated.

The article contains 10 figures and 18 bibliographic references.

UDC 621.36.001

Allowing for Nonuniformity in the Distribution of Defects in Evaluating the Yield Probability of Suitable Integrated Semiconductor Circuits. Vasilyev, K.A., Kozlov, A.D., Kozlov, G.G., and Baralov, D.V. in the collection *Microelectronics*, edited by F.V. Lukin, No 5, p 151, Sovetskoye Radio Publishing House, 1972.

A method is suggested for predicting the yield of suitable circuits by allowing for the nonuniform distribution of defects. It is shown that with increase in the complexity of the circuits and increase in the average number of defects on the circuit that accompany it, the influence of the non-uniformity of their distribution on the percent of yield of suitable circuits also grows.

The article contains 1 figure, 2 tables, and 7 bibliographic references.

UDC 621.362.8-721.396.6-181.9

Subnanosecond Memory Element on the Basis of the Gunn Effect in Gallium Arsenide. Vasilyev, K.A., Kravchenko, N.N., Gritsenko, V.V., and Zhukovskiy, Yu.I. in the collection *Microelectronics*, edited by F.V. Lukin, No 5, p 153, Sovetskoye Radio Publishing House, 1972.

The article examines a subnanosecond memory element on the basis of the Gunn effect in gallium arsenide for use in superoperational memory devices with random sampling during

-0-

recording and readout. The memory element consists of two four-electrode Gunn instruments, the first of which serves for recording and storage, the second of which serves for readout of the stored information. The time of the recording-readout cycle is about 0.5 msec. The power computed in storage mode 1 is about 100 mW; in storage mode 0 it is about 115 mW.

The article contains 4 figures and 3 bibliographic references.

UDC 681.142 + 621.374.3

Diode-Transistor Logic Circuit With Feedback. Maunov, Yu. Ye. and Puchkov, I. F. In the collection Mikroelektronika, edited by P. V. Lukin, No 5, p. 166. Sovetskoye Radio Publishing House, 1972.

The article gives a theoretical analysis of the electrical parameters of a circuit with feedback; its advantages are analyzed in comparison to the diode-transistor circuit without feedback. It is shown that the use of a feedback circuit is especially effective in designing micropower circuits. An experimental investigation is given for the circuit with feedback in the micropower band a comparison is given with the microcircuit "Mikrovatt-1".

The article contains 11 figures, 1 table, and 6 bibliographic references.

UDC 621.382.029.64

Logic Elements on Gunn Diodes. Vorenkova, G. M., Orlova, L. K., Starostitskiy, V. I., and Senei, I. K. In the collection Mikroelektronika, edited by P. V. Lukin, No 5, p. 162. Sovetskoye Radio Publishing House, 1972.

The article describes the properties of experimental samples of planar Gunn diodes. On 200-pm long samples the authors make a current impulse shape and memory elements of two types.

The article contains 6 figures, 1 table, and 5 bibliographic references.

UDC 621.375.001.24:621.382.32

Static Analysis of the Simplest Differential Cascade on HDP Transistors. Stepanenko, I. P. In the collection Mikroelektronika, edited by P. V. Lukin, No 5, p. 190. Sovetskoye Radio Publishing House, 1972.

1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--DESIGN AND OPERATION OF PISTON COMBINATION ENGINES -U-

AUTHOR--(05)--ORLIN, A.S., ALEKSEYEV, V.P., KOSTYGOV, N.I., KRUGLOV, M.G.,  
KRYLOV, A.N.  
COUNTRY OF INFO--USSR

SOURCE--DESIGN AND OPERATION OF PISTON COMBINATION ENGINES. SEC. ED., REV.  
AND EXP. (USTROYSTVO I RABOTA PROSHNEVYKH I KOMBINIROVANNYKH DVIGATELEY)  
DATE PUBLISHED-----70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--DIESEL ENGINE, GASOLINE ENGINE, INTERNAL COMBUSTION ENGINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3003/1715

STEP NO--UR/0000/70/000/000/0001/0383

CIRC ACCESSION NO--AM0130577

UNCLASSIFIED



2/2 019

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AM0130577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: INTRODUCTION  
5. CHAPTER I. OPERATIONAL PROCESSES IN PISTON AND COMBINATION ENGINES  
11. II. PARAMETERS CHARACTERIZING PISTON ENGINES 39. III. THE  
WORKING PRINCIPLE OF THE ENGINES 57. IV. GASOLINE ENGINES 145. V.  
DIESEL ENGINES 204. VI. GAS ENGINES 324. VII. SPECIAL DESIGNS OF  
ENGINES 358. THIS IS A TEXT BOOK WRITTEN FOR THE COURSE "INTERNAL  
COMBUSTION ENGINES" OF THE MOSCOW HIGHER TECHNICAL SCHOOL AND CONTAINS A  
DESCRIPTION OF THE WORKING PRINCIPLE AND OPERATION OF PISTON INTERNAL  
COMBUSTION ENGINES OF ALL TYPES AND ALSO THE SPECIAL FEATURES OF THE  
OPERATION AND DESIGN OF COMBINATION AND ROTOR PISTON ENGINES. THIS IS  
THE FIRST VOLUME OF A FOUR VOLUME EDITION ON "INTERNAL COMBUSTION  
ENGINES".

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--ABSORPTION SPECTRUM OF PRASEODYMIUM ACETATE TETRAHYDRATE SINGLE  
CRYSTALS -U-  
AUTHOR--(03)-PETROV, K.I., ZAYTSEVA, M.G., ORLIN, N.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(5), 868-71  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, PHYSICS  
TOPIC TAGS--ABSORPTION SPECTRUM, LIGHT ABSORPTION, CRYSTAL HYDRATE,  
PRASEODYMIUM COMPOUND, ACETATE, IONIC BONDING, COVALENT BONDING,  
ELECTRIC FIELD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/1417 STEP NO--UR/0368/70/012/005/0868/0871  
CIRC ACCESSION NO--AP0135091

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0135091

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ABSORPTION SPECTRA OF PR(UAC) SUB3 .4H SUB2 U IN THE 4000-9000 ANGSTROM REGION AT 770DEGREESK WERE INVESTIGATED BY USING NATURAL AND POLARIZED LIGHT TO CLASSIFY THE ELECTRON TRANSITIONS, THE SYMMETRY OF THE CRYST. FIELD, AND THE CHARACTER OF THE INTERACTION OF PR PRIME3POSITIVE WITH ITS SURROUNDING ATOMS. THE SPLITTING OF THE LEVELS INDICATE THE LOW SYMMETRY OF THE CRYST. FIELD. THE SMALL DIFFERENCE BETWEEN THE POSITIONS OF THE CENTERS OF GRAVITY OF SLJ LEVELS OF PR PRIME3POSITIVE IN CRYSTALS AND IN THE FREE ION INDICATE THE PREDOMINANTLY IONIC CHARACTER OF BONDING IN THE CRYSTALS. THE COVALENT FRACTION IN THE BOND IS ESTD. MORE QUANT. BY USING SLATER INTEGRALS AND IS OF THE ORDER OF A FEW PERCENT.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--PERRHENATE COMPLEXES OF HOLMIUM AND ERBIUM -U-  
AUTHOR--PETROV, K.I., ORLIN, N.A., PLYUSHCHEV, V.YE. O  
COUNTRY OF INFO--USSR  
SOURCE--ZH. NEORG. KHIM. 1970, 15(2), 439-41  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--METAL COMPLEX COMPOUND, HOLMIUM COMPOUND, ERBIUM COMPOUND,  
SPECTROPHOTOMETRIC ANALYSIS, RHENIUM COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1984/1255 STEP NO--UR/0078/70/015/002/0439/0441  
CIRC ACCESSION NO--AP0055926  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0055926

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT ROOM TEMP. AND IONIC STRENGTH  
SIMILAR TO 4.5, THE STABILITY CONSTS. (K) OF HO AND ER PERRHENATES  
UNRED SUB4) SUB3 ARE 1.744 TIMES 10 PRIME NEGATIVE1 AND 1.512 TIMES 10  
PRIME NEGATIVE1, RESP. K WERE DETD. SPECTROPHOTOMETRICALLY.

UNCLASSIFIED

172 031 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--FORMATION AND RETENTION OF THE STRAIGHT PLASMA COLUMN IN A  
QUADRUPOLE HF MAGNETIC FIELD -U-  
AUTHOR--ORLINSKIY, D.V.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL TEKHNIЧЕСКОИ ФИЗИКИ, VOL. 40, JAN. 1970, P. 113-127  
DATE PUBLISHED--70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--MAGNETIC FIELD CONFIGURATION, HIGH FREQUENCY, PLASMA  
STABILITY, DISCHARGE TUBE, PLASMA DISCHARGE, CURRENT DENSITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PRUXY REEL/FRAHE--1978/1222 STEP NO--UR/0057/70/040/000/0113/0127  
CIRC ACCESSION NO--AP0046145  
UNCLASSIFIED

272 031

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0046145

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL INVESTIGATION OF THE DYNAMIC STABILIZATION OF THE STRAIGHT PLASMA COLUMN IN A QUADRUPOLE HF MAGNETIC FIELD. IT IS FOUND THAT DURING THE INITIAL STAGE OF A DIRECT PULSE DISCHARGE IN A HF FIELD, AND AT AN INITIAL INCREASE RATE OF THE CURRENT OF MORE THAN 2 TIMES 10 TO THE 9TH POWER A-SEC, THE PLASMA COLUMN IS FORMED BY A CONSTRICTION IN THE DISCHARGE TUBE AXIS. AFTER THE CONSTRICTION, PLASMA MAINTAINS ITSELF IN THE EQUILIBRIUM AS LONG AS THE INCREASING CURRENT ATTAINS A CERTAIN CRITICAL VALUE. FROM THE THEORETICAL STANDPOINT, THE BREAKDOWN OF THE PLASMA COLUMN CAN BE EXPLAINED IN TERMS OF THE VIOLATION OF THE STABILITY CRITERION FOR LONG WAVE DEFORMATIONS.

UNCLASSIFIED

USSR

UDC: 778.4:621.735.9:533.6

GOVOROV, B. V., ORLOV, A. A.

"Using a Laser Light Source to Make Stereophotographs of Particle Tracks"

Moscow, Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii, Vol 18,  
No 3, pp 209-210

Abstract: A stereophotographic method is proposed for studying the tracks of microparticles artificially suspended in a flow of gas or liquid to visualize the velocity distribution. The flow around the model in a transparent tube is illuminated by a laser beam directed parallel to the direction of flow. The flow is photographed by a stereocamera aimed through the side wall of the tube.

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ORLOV, A.A.

RAU / 10-760 / 5-11-11-12  
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compares theory with earlier experimental results. The divergence seen at lower frequencies and higher pressures is ascribed to increased multiphoton ionization probabilities owing to local nonuniformity.

Kurnetsov, A. Ye., A. A. Orlov, and  
P. I. Ulyakov. Polished regime for  
vaporizing optical materials by CO<sub>2</sub>  
laser radiation. IN: Sbornik  
Kvantovaya elektronika. Moskva.  
no. 7, 1972, 57-60.

An analysis is given of experimental results on the interaction of CO<sub>2</sub> laser radiation ( $\lambda = 10.6\mu$ ; constant power density  $\approx (0.5-2) \cdot 10^6 \text{ w/cm}^2$ ) with a series of optical materials, as reported by Bubyakin et al (FIAN, 1969, 34p), where a shielding effect in the evaporation process of the substance and cavity formation were noted. Time characteristics of the cavity depth  $h_k$  and the length of the luminous part of the flare  $l_f$  for KY quartz glass are plotted in Fig. 1. The evaporation displays a clearly

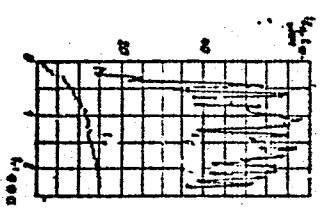


Fig. 1 Relationship of cavity depth  $h_k$  and flare length  $l_f$  to irradiation time for quartz glass ( $q = 1.9 \times 10^6 \text{ w/cm}^2$ )

USSR

UDC 597.591.175

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PROTASOV, V. R., BASOV, B. M., KRUMIN, V. M., ORLOV, A. A., and KUZNETSOV, V. A., Institute of Evolutionary Morphology and Ecology of Animals, USSR Academy of Sciences, Moscow

"Low-Frequency Electrical Discharges of Nonelectrical Fish"

Moscow, Zoologicheskii Zhurnal, Vol 50, No 5, May 71, pp 779-782

Abstract: Electrical discharges from a number of nonelectric fish in the frequency range of 0.2 to 12.0 cycles were recorded. The fish used differed in their movements, their structural make-up, excitability, and respiratory activity. The oscillograms obtained could be separated into two groups: the first one reflects the respiratory processes of the fish. In this case, potentials can be recorded when the fish are in a quiet state close to the electrodes. Values of 5-20 microvolts were recorded. The second group of oscillograms reflects the motor activity of the fish during excitation. The amplitude of these potentials is considerably higher and reaches 150 microvolts. Amplitude and frequency of the impulses are increased with increasing excitation of the fish. These impulses are caused not only by neuromuscular activity but also by the movement of the fish between the electrodes. The potentials are specific for each fish species. It was concluded that degree

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USSR

PROTASOV, V. R., et al., Zoologicheskii Zhurnal, Vol 50, No 5, May 71,  
pp 779-782

of excitation and fish mobility can be directly related to the oscillograms. The low-frequency impulses from some groups and schools of fish were recorded also. A summation effect of frequency as well as duration of the impulses was found. It was noted that there was some synchronization in the respiratory rhythm of the fish.

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USSR

UDC: 621.396.679.4

~~ORLOV A A~~

"A Tension Device for an Antenna Feeder"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, Apr 72, Author's Certificate No 333644, Division H, filed 15 Apr 70, published 21 Mar 72, p 213

Translation: This Author's Certificate introduces a tension device for an antenna feeder which contains a weight suspended on the feeder brace. As a distinguishing feature of the patent, in order to ensure reliable tension on the feeder and to prevent twisting under wind loads, the device is made in the form of two nonmetallic parallel tie rods carrying the load of their own weight hinged at one end to the column support of the feeder, and at the other end to the edges of the feeder brace.

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USSR

UDC 621.371.029.4

ZABAVINA, I. N., NIKITIN, A. A., and ORLOV, A. B.

"Measuring Phase Velocities in the Ultra-Long Wave Range Using Radio Relay Communication Lines"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 1 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 1--collection of works) "Nauka," 1972 pp 235-239 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A324)

Translation: Results of measuring the phase velocities in the ultra-long wave range using a system of dispersed points interconnected by radio relay lines are discussed. The instrument error in determining  $v/c$  in the 10-14 kHz range did not exceed  $(3-5) \cdot 10^{-4}$ . Bibliography of 12. A. L.

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1/2 038 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--CURRENT STATE OF INVESTIGATIONS OF VLF PROPAGATION IN THE EARTH  
IONOSPHERE WAVEGUIDE CHANNEL -U-  
AUTHOR--(03)-MAKAROV, G.I., NOVIKOV, V.V., ORLOV, A.B.  
COUNTRY OF INFO--USSR  
SOURCE--IZVYUZ. RADIOFIZIKA, VOL. 13, NO. 3, 1970, P. 321-355  
DATE PUBLISHED-----70  
SUBJECT AREAS--ATMOSPHERIC SCIENCES, ELECTRONICS AND ELECTRICAL ENGR.,  
EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--VLF PROPAGATION, WAVEGUIDE, ELECTROMAGNETIC FIELD, IONOSPHERE,  
EARTH PLANET, APPROXIMATION METHOD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1991/0847 STEP NO--UR/0141/70/013/003/0321/0355  
CIRC ACCESSION NO--AP0110568  
UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0110568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF THE MAIN FEATURES OF ELECTROMAGNETIC FIELDS IN THE VLF SPECTRAL RANGE EXTENDING FROM 1 TO 60 KHZ. THE CURRENT STATE OF THE GENERAL THEORY FOR THESE WAVELENGTHS IS REVIEWED IN TERMS OF PROPAGATION IN THE EARTH IONOSPHERE WAVEGUIDE, EFFECTS OF IONOSPHERIC IRREGULARITIES, AND THE INFLUENCE OF THE DAYTIME AND NIGHTTIME SEGMENTS OF THE WAVEGUIDE. RECENTLY DEVELOPED APPROXIMATE METHODS OF CALCULATION ARE DESCRIBED WHICH MAKE IT POSSIBLE TO CONDUCT QUALITATIVE INVESTIGATIONS. FORMULAS ARE GIVEN FOR ANALYZING THE PHASE VELOCITY ATTENUATION OF NORMAL WAVES AS FUNCTIONS OF FREQUENCY AND WAVEGUIDE PARAMETERS. THE MAIN RESULTS OF PUBLISHED NUMERICAL CALCULATIONS ARE DESCRIBED AND COMPARED WITH EXPERIMENTAL DATA. FACILITY: LENINGRADSKII GOSUDARSTVENNYI UNIVERSITET, Leningrad, USSR.

UNCLASSIFIED

USSR

UDC: None

MAKAROV, G. I., NOVIKOV, V. V., and ORLOV, A. B.

"Present State of ULF Propagation Research in the Earth-Ionosphere Waveguide Channel"

Gorkiy, Izvestiya VUZov SSSR Radiofizika, Vol. 13, No. 3, 1970, pp 321-355

Abstract: This is a review article summarizing the most recent research in ultra low-frequency electromagnetic wave propagation. It is divided into three sections; the first deals with the general theory of ULF; the second with approximate research methods into the behavior of characteristic quantities; the third with the results of the theoretical computations and their comparison with experimental data. The ULF range is here defined as extending approximately from 1 to 60 KHz. Interest in ULF has been lively since the 50's, and its possibilities for communication on a global scale, especially for frequencies in the 10-20 KHz range, has aroused a great deal of interest. An important characteristic of

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USSR

MAKAROV, G. I., et al, Izvestiya VUZov SSSR Radiofizika, Vol. 13,  
No. 3, 1970, pp 321-355

such fields is their high stability compared to the unpredictability of the irregular ionospheric variations. This suggests, according to the authors, that they might be useful in phase navigation systems.

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USSR

UDC 534.2

GENKIN, M. D., GOLUBEV, V. S., MIGUN, YU. G., ORLOV, A. I.

"Technique and Equipment for Studying Three-Dimensional Oscillations of Rotating Parts of Reducer Installations"

V sb. Dinamika i akustika mashin (Machine Dynamics and Acoustics -- Collection of Works), Moscow, "Nauka", 1971, pp 41-57 (from RZh-Fizika, No 3, Mar 72, Abstract No 3Zh479)

Translation: A technique for using accelerometers to study three-dimensional vibrations of rotating parts consisting of solid bodies is presented in general form. The essence of the method consists of determining the components of translational and angular displacements of the part in a space of three measurements. These components are determined in a coordinate system connected with the part from readings of a group of accelerometers fastened to the parts in some way. Mathematically, the problem reduces to the solution of a system of algebraic equations defined by the readings of the instruments. Equipment errors in a transformation of coordinates are analyzed. Authors abstract.

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USSR

UDC 669.71.472

ORLOV, A. I., KOPYTOV, YE. A., YELSHIN, V. V., ZEL'BERG, B. I.

"Study of the Possibility of Continuous Measurements of the Alumina Concentration in Cryolite-Alumina Melts by the Conductometric Method"

Obogashch. i metallurgiya polezh. iskopayemykh -- V sb (Beneficiation and Metallurgy of Minerals -- collection of works), Irkutsk, 1970, pp 109-110 (from RZh-Metallurgy, No 4, Apr 71, Abstract No 4G160)

Translation: The basis for the conductometric procedure is the principle of measuring the specific resistance of the cryolite-alumina melt by the magnitude of the voltage drop in the electrode-melt-electrode section with a defined value of the alternating current. The specific resistance varies significantly as a function of the physico-chemical state of the melt. For melts with a cryolite ratio of 1.7, a dependence of the variation of the specific resistance as a function of the  $Al_2O_3$  concentration is observed for frequencies of 250-3,000 hertz. With an increase in the melt temperature, the extremum shifts toward the low-concentration side. With an increase in alternating current frequency from 250 to 3,000 hertz, the specific resistance decreases under other equal conditions. With an increase in the cryolite ratio from 1.7 to 2.85, the conductivity of the melt increases.

1/1

USSR

UDC: 621.378.33

ORLOV, A. I. ORLOV, L. N., RUBANOV, V. S., Institute of Physics, Academy of Sciences of the BSSR

"Effect Which Imperfection of the Cavity Elements Has on the Characteristics of a Triangular Ring Laser With Ninety-Degree Faraday Rotator"

Minsk, Doklady Akademii Nauk BSSR, Vol 16, No 5, May 72, pp 410-414

Abstract: The paper examines the influence of imprecise angle setting of the linear phase plate, instability of the magnetic field of the Faraday cell, and the presence of phase anisotropy of the mirrors on frequency splitting, azimuth, and nature of polarization of the opposed waves in a ring laser with isotropic cavity containing a ninety-degree Faraday rotator, a  $\frac{1}{2}$ -wave plate, and an arbitrary linear phase plate. It is shown that the actual errors in the elements of such a system do not distort its polarization-frequency characteristics.

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Magnesium

USSR

UDC 669.721.472

POLYAKOV, P. V., ORLOV, A. M.

"Measuring the Interphase Tension at the Magnesium Boundary With Molten Electrolytes"

Sb. tr. Vses. mezhvuz. nauch. konferentsii po teorii protsessov tsvetn. metallurgii (Collected Works of the All-Union Interuniversity Scientific Conference on the Theory of Processes in Nonferrous Metallurgy), Alma-Ata, 1971, pp 309-312 (from RZh-Metallurgiya, No 7, Jul 1971, Abstract No 7G226)

Translation: The method of an embedded drop was used to determine the interphase tension. The electrolyte contained (in %): Fe 0.001, Al 0.001, Ti 0.002; type Mch-1 Mg was used. The experiments were performed in the temperature range of 650-810° with a drop holding time for each temperature of ≥15 minutes. The interphase tension was calculated by the following equation:  $\sigma = \Delta d/d$ , where  $d$  was defined as the function of the diameter of the equator and the distance to the top of the drop. The sharpest increase in the interphase tension is observed in melts containing F-ion. There are 3 illustrations and a 9-entry bibliography.

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1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--FORMATION OF DROPS OF MAGNESIUM IN THE ELECTROLYSIS OF CHLORIDE  
MELTS --U-  
AUTHOR--(03)--GRLOV, A.M., POLYAKOV, P.V., TATAKIN, A.N.  
COUNTRY OF INFO--USSR  
SOURCE--IZVEST. V.U.Z., TSVETNAYA MET., 1970, (1), 39-42  
DATE PUBLISHED--70  
SUBJECT AREAS--MATERIALS, CHEMISTRY  
TOPIC TAGS--MOTLEN CHLORIDE, ELECTROLYSIS, MAGNESIUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/1552 STEP NO--UR/0149/70/000/001/0039/0042  
CIRC ACCESSION NO--AP0125178  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125178

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANISM GOVERNING THE FORMATION OF MG DROPS IN THE ELECTROLYSIS OF CHLORIDE (NACL PLUS KCL PLUS MGCL SUB2) MELTS WITH ELECTRODES OF VARIOUS COMPOSITIONS (C STEEL, CAST IRON, ETC.) WAS STUDIED. THE GRAPHITE CONTAINED IN THE ELECTRODE MATERIALS ACTED AS STABILIZER FOR THE DROPS OF MG ON THE ELECTRODE AND IN THE ASSOCIATED MG EMULSION. THE RELATION BETWEEN THE NUMBER OF DROPS AND THE C.D. WAS IN GENERAL OF A VERY COMPLEX CHARACTER, APPARENTLY AS A RESULT OF THE COALESCENCE OF DROPS ON THE CATHODE.

UNCLASSIFIED

USSR

UDC 539.67

NIKOLAYEV, V. V., ORLOV, A. N., and TALUTS, G. G.

"Contribution of Plane Dislocation Pileups to an Amplitude-Independent Internal Friction"

Sb. "Vnutrenneye treniye v metallicheskih materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 113-119

Abstract: A calculation of the amplitude-independent internal friction is presented. It is shown that dislocation pileup distribution along the lengths can substantially alter the internal friction frequency dependence.  
5 references.

1/1



USSR

UDC 539.3

VLADIMIROV, V.I., ORLOV, A.N. (Moscow), Physicotechnical Institute imeni  
A.F. Ioffe, Academy of Sciences, USSR

"Thermally Activated Origin of Microcracks in Crystals"

Kiev, Problemy Prochnosti, No 2, 1971, pp 36-38

Abstract: A brief analysis is given of a possible system of thermally activated origin of microcracks in crystals by means of fusion of the leading accumulation dislocations with account taken of the movement of succeeding dislocations. The obtained results have led to the reconsideration of some concepts concerning the necessary conditions of the power advantage of this process, and the least necessary number of dislocations in the accumulation. 2 figures. 9 bibliographic entries.

1/1

Acc. Nr: **AP0047360**

Ref. Code: **UR0589**

PRIMARY SOURCE: Vestnik Khirurgii imeni I. I. Grekova, 1970,  
Vol 104, Nr 1, pp 93-95

THE EFFECT OF MOIST NECROSIS IN BURN WOUND ON THE COURSE  
OF BURN DISEASE

By N. I. Kochetugov, A. N. Orlov and O. S. Krasnopentitsa

In burns with moist necrosis local inflammatory reaction, hemoconcentration during the period of shock, hyperazotaemia are more pronounced, and earlier than in lesions with dry necrosis psychic disturbances and generalization of infection occur. Experimentally, burns with moist necrosis result in mortality more promptly. A grave course of burns with moist necrosis is stipulated, probably, by the formation of great amounts of tissue destruction products in the burn wound and their getting in blood.

REEL/FRAME

19790886

USSR

UDC: 621.7.073

SEVERDENKO, V. P., SUKHODREV, E. Sh., CHELYSHEV, A. P., TYURIN,  
L. N., and ORLOV, A. R.

"Stability of Gear Matrices Obtained by Plastic Deformation Methods"

Minsk, Izvestiya Akademii nauk BSSR--Seriya fiziko-tekhnicheskikh  
nauk, No 4, 1973, pp 5-7

Abstract: Results are given of research on the stability of gear matrices under production conditions in the Borisovskiy Plant for Auto-Tractor Electrical Equipment, in the process of stamping out ST-8 starter gears by the method of hot combination stamping. This method, discussed in an earlier paper (V. P. Severdenko, et al, Promyshlennost' Belorusii, No 4, 1969), was investigated in the present paper at a stamping tempo of 25 sec with the specimens heated to 750-800° C. The stability of matrices made of fast-cutting steels R12 and R18, obtained by closed broaching, was investigated. Matrices made by gear-shaping and by broaching were compared. Three causes of matrix failure were found: the appearance of thermal cracks; abrasive wear of the pattern; warping of the matrix pattern. Methods for improving the stability of the matrices are recommended.

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- 98 -

ORLOV, A. R.



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DIA/TAM No. 170-23-01

ORLOV, A. R. AM/ESTC  
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CHARLOTTESVILLE, VIRGINIA 22904  
K. H. A. 04/4  
8-1111C

TRANSLATION

Date: 18 January 1973

ENGLISH TITLE: THERMAL EXTENSION OF STAINLESS STEELS

SOURCE: AKADEMIA NAUK BSSR ODBELNIYE FIZIKO-TEKHNICHESKIE NAUKI,  
MINSK, 1969.

AUTHOR: A. R. Orlov

LANGUAGE: Russian

REQUESTOR: SMITA  
TRANSLATOR: Universal Lan-  
guage Services, Inc.  
COUNTRY: USSR

ABSTRACT:

This article describes the effect of temperature on extension of two brands of stainless steel. Thermal deformation of metals at a temperature higher than room temperature, but lower than the temperature of recrystallization takes attention of the metals easier. The best temperature for the two stainless steels tested was 400°C.

NOTICE

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USSR

UDC 621.791.052.001.5:539.4:66.065.5

PROKHOROV, N. N., Doctor of Technical Sciences, ORLOV, A. S., Engineer (Moscow Higher Technical School imeni N. E. Bauman), and PROKHOROV, N. N., Candidate of Technical Sciences (Moscow Construction Engineering Institute imeni V. V. Kuybyshev)

"Study of the Properties and Applicability of Specimens for Estimating the Technological Strength of Metals During Crystallization in Welding"

Moscow, Svarochnoye Proizvodstvo, No 12, Dec 70, pp 41-44

Abstract: The authors studied the suitability of different specimens for technological strength tests and the effect of rigidity on the magnitude of shape-changing deformations in the samples by means of the standard series method, which consists in the use of alloys with different technological strength indices. The standard series was based on series-produced electrodes OZS-4 and UONI-13/55. The technological strength of the standard-series electrodes was estimated on an LTP1-4 machine according to the method of the Moscow Higher Technical School imeni N. E. Bau-  
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USSR

PROKHOROV, N. N., et al., Svarochnoye Proizvodstvo, No 12, Dec 70, pp 41-44

man. Six batches of electrodes were used, in which the value of the cracking resistance index varied from 3.96 to -1.10 mm/min. The following highly rigid technological specimens were studied in accordance with the program of the International Institute of Welding: 1) NRL specimen (U.S.); 2) Pellini specimen (widely used abroad and at the Electric Welding Institute imeni Ye. O. Paton); 3) circular specimen (also widely used in the USSR and abroad); 4) Tekken specimen (Japan); 5) tee specimen (used as the standard test for hot-crack susceptibility in the USSR, Poland, East Germany, Czechoslovakia, England, and West Germany); 6) Lehigh specimen. Studies were also made of two new specimens, viz. a tee specimen of variable rigidity and a "rigid wedge" specimen, both recommended by the CEMA Standardization Institute. The specimens were made of VSt. 3 steel plate 25 and 10 mm thick, with the following chemical composition (in percentages): 0.17-0.16 C, 0.37 Mn, 0.30-0.27 Si, 0.035-0.033 S, 0.03-0.02 Ni, 0.018-0.014 P, 0.07 Cu, 0.02 Cr (with the smaller content of individual elements referring to the thinner metal).

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USSR

PROKHOROV, N. N., et al., Svarochnoye Proizvodstvo, No 12, Dec 70, pp 41-44

Specimens based on the principle of increased rigidity have a relatively low internal strain rate, which rules out cracking in the testing of standard electrodes, and hence prevents a comparison of technological safety factors for standard electrodes widely used in the production of metal structures. Experiments confirm a decrease in technological strength during crystallization in welding with decreased rigidity of the elements to be welded (plate width). In designing quantitative specimens there should be a decrease in the rigidity of the specimen, which will make possible an increase in their crack susceptibility and a significant decrease in the metal and labor input of the tests. The greatest magnitude and range of variation in shape-changing strain rate are found in a new specimen developed at the Technological Strength Laboratory of Moscow Higher Technical School imeni N. E. Bauman. The specimen is a set of rectangular plates of varying width, along whose axis is a blind V-groove. Based on the principle of decreased rigidity, this specimen permits the obtaining of weld cracks with all the electrodes being used,

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PROKHOROV, N. N., et al., Svarochnoye Proizvodstvo, No 12, Dec 70, pp 41-44

including the OZS-4 and UONI-13/55. The article describes calculations of weld metal strain rates in the region of crack initiation as a factor determining the probability of cracking. The new specimen has the greatest range of internal strain rate variation in the brittle temperature range, light weight, and relatively low test labor input.

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USSR

ORLOV, A. V.

UDC: 51

"Mathematical Economic Models in Retail Trade"

Ekonomiko-matematicheskiye modeli v roznichnoy trgovle (cf. English above),  
"Ekonomika", 1972, 192 pp, ill. 1 r. (from RZh-Kibernetika, No 6, Jun 72,  
Abstract No 6V479 K)

Translation: Chapter I, "Mathematical Economic Models -- Instrument of  
Control in Retail Trade"; Chapter II, "Mathematical Economic Models of Or-  
ganization and Distribution of the Retail Trade Network"; Chapter III,  
"Mathematical Economic Models for Planning Retail Trade"; Chapter IV,  
"Models of Management Strategies and Trade Situations".

1/1

- 37 -

USSR

UDC 621.791.763.1:669.7.013

CHAKALEV, A. A., Candidate of Technical Sciences, PODLESNYKH, V. G., Engineer,  
ORLOV, B. D., Doctor of Technical Sciences and TSAR'KOV, G. P., Engineer

"Some Problems of Selection of Spot Welding Modes for Light Alloys"

Moscow, Svarochnoye Proizvodstvo, No 4, Apr 72, pp 23-24.

Abstract: In this work, the process of spot welding is studied from the standpoint of plastic deformation of the metal when electrodes with spherical working surface are used. The role of plastic deformation of metal during spot welding is shown to be significant, determining the resistance of the process to the formation of various welding defects and the effectiveness of heating. A system of classification of light alloys based on plastic deformation resistance of the material under conditions of spot welding is suggested. A relationship is suggested for approximate estimation of certain mode parameters. Recommendations are given for the selection of types of welding machines.

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USSR

UDC: 621.791.763.029

ORLOV, B. D., MARCHENKO, A. L., ISAKOV, A. F., BILEV, K. K., IL'IN, B. V.

"A Liner for Spot and Roller Welding"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obozretsiya, Tovarnyye Znaki, No 5, 1970, p 74, patent No 261602, filed 6 Nov 68

Abstract: This Author's Certificate introduces a liner for spot and roller welding of aluminum-magnesium alloys. This liner, in the form of a strip, is introduced into the zone of the welded seam mainly for checking penetration. As a distinguishing feature of the patent, inspection quality is improved and the corrosion strength of the welded joint is increased by making the strip from an alloy of aluminum and manganese taken in the following percent ratio: manganese -- 5-6%, and the remainder aluminum. The thickness of the strip is 7-8% of the thickness of one of the plates being welded.

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USSR

UDC: 621.396.6.049.75.002

ORLOV, B. M. and BRYKSIN, V. A.

"Investigating the Influence of Silver Migration on the Technical Parameters and Efficiency of Printing Plates"

Sb. nauch. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (fiz.-mat. seriya) (Scientific Collection on Problems in Miniature Electronics, Moscow Institute of Electronics Engineering, Physics-Mathematics Series) No 9, 1972, pp 21-25 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10V327)

Translation: Silver migration in printing plates was investigated for various operation modes for the purpose of determining the optimal operating conditions of printing plates. The variation was measured at the time of resistance between conductors. The measurements were made on protected and unprotected plates. It was established that the unprotected plates are low in reliability for all applied voltages and for any practical gaps between conductors. Plates protected by lacquer work dependably for more than 30 days at voltages of less than 27 V for any gaps. One illustration.

N. S.

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USSR

UDC 615.919:591.145.2.615.918:58.615.9:576.8.097.29

ORLOV, B. N. and ARATEN, S. M.

"Influence of Calcium Ions on the Development of the Suppression of Spinal Cord Activity by Cobra Venom"

Uch. zap. Gor'kov. un-t. Ser. biol. (Educational Proceedings of the Gor'kov University, Biological Series), Vyp 40, pp 40-43 (from Referativnyy Zhurnal -- Farmakologiya. Khimioterapevticheskiye Sredstva. Toksikologiya, No 1, 1973, Abstract No 1.54.778 by V. K.)

Translation: The electric potential of the sciatic nerve in frogs -- maintained in a Ringer solution containing 1.08, 5, 10, and 0.14 m moles  $\text{Ca}^{++}$  and treated with a 1% solution of the venom (I) from the Central Asian cobra -- was studied to determine the time in which the amplitude decreased by 50%. The increase in  $\text{Ca}^{++}$  concentration to 5 m-moles definitely increased the stability of the preparation towards the effect of (I). It was shown that a suppressing effect developed due to the deactivation of the Na-conducting membrane. In experiments with nerves from which the epineural sheath had been removed, a reduction in the  $\text{Ca}^{++}$  concentration to trace amounts also increased the stability of the preparation to the effect of (I). Under these conditions the phospholipase A combines with the inhibitor (I).

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USSR

UDC 615.919:591.145.2.615.918:58.615.9:576.8.097.29

CHEREPNOV, V. L., ORLOV, B. N., and PISHCHIK, A. M.

"Effect of Cobra Venom on the Structure of Frog Nerves"

Uch. zap. Gor'kov. un-t. Ser. biol. (Educational Proceedings of the Gor'kov University, Biological Series), Vyp 40, 1972, pp 52-55 (from Referativnyy Zhurnal -- Farmakologiya. Khimioterapevticheskiye Sredstva. Toksikologiya, No 1, 1973, Abstract No 1.54.779 by V. K.)

Translation: When the sciatic nerve of a frog was placed in a 10% solution of venom (I) from the Asiatic cobra for 30 minutes, a swelling of the epineurium and a thickening of the myelin sheath were observed. The destruction of the Shvammovsky cells and collagen fibers was also noted. In a 0.2% solution the epineurium ruptured but the nerve fibers did not change.

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USSR

UDC 615.919:591.145.2.615.918:58.615.9:576.8.097.29

ORLOV, B. N., and GELASHVILI, L. B.

"Principal Mechanisms of the Influence on Nerve Cells of Cobra Venom"

Uch. zap. Gor'kov. un-t. Ser. biol. (Educational Proceedings of the Gor'kov University, Biological Series), Vyp 40, 1972, pp 20-32 (from Referativnyy Zhurnal -- Farmakologiya. Khimioterapevticheskiye Sredstva. Toksikologiya, No 1, 1973, Abstract No 1.54.777 by V. K.)

Translation: Data were obtained by the induced potential method using both rabbits and cats with electrodes implanted in different areas of the brain. It was shown that on the basis of the suppression of activity of the central nervous system by the cobra venom, the effect of the venom is to block the mechanism of excitation of the central area. The fact that the venom has central "n-cholinolytic" properties may be responsible for this.

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USSR

UDC 615.919:591.145.2.615.918:58.615.9:576.8.097.29

ORLOV, B. N. and KRYLOV, V. N.

"A Disruption of the Heart Activity of Warm-Blooded Animals During Cobra Venom Poisoning"

Uch. zap. Gor'kov. un-t. Ser. biol. (Educational Proceedings of the Gor'kov University, Biological Series), Vyp 40, 1972, pp 44-51 (from Referativnyy Zhurnal -- Farmakologiya. Khimioterapevticheskiye Sredstva. Toksikologiya, No 1, 1973, Abstract No 1.54.780 by V. K.)

Translation: A bradycardia and a depression of the auricle complex of the EKG were observed for rabbits into which 0.25-1 mg/kg of venom (I) from the Central Asian cobra had been injected. The injection of I into vagotomized animals did not lead to a reduction in the rhythm, although a change in the EKG showed this effect. (21 references)

1/1



016 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--ELASTIC AND INELASTIC SCATTERING OF PARTICLES AND THE MODEL OF AN  
EXCITED CORE IN THE A EQUALS 25-35 RANGE -U-  
AUTHOR--(05)-ANTROPOV, A.YE., PLAVKO, A.V., ZARUBIN, P.P., KUDRYASHOV,  
V.I., ORLOV, B.N.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970; 34(1), 153-60  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ELECTRON STRUCTURE, NUCLEAR MODEL, EXCITED NUCLEUS, ELASTIC  
SCATTERING, INELASTIC SCATTERING, SODIUM ISOTOPE, MAGNESIUM ISOTOPE,  
SULFUR ISOTOPE, CHLORINE ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1988/0235

STEP NO--UR/0048/70/034/001/0153/0160

ARC ACCESSION NO--AP0105311

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

2/2 016  
 RC ACCESSION NO--AP0105311  
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DATA ARE ANALYZED ON THE ELASTIC  
 AND INELASTIC SCATTERING OF PARTICLES WITH EXCITATION OF LOWER LEVELS OF  
 PRIME23 NA, PRIME24 MG, PRIME25 MG, PRIME26 MG, PRIME33 S, PRIME34 S,  
 AND PRIME35 CL. ALSO, DATA OF MEASUREMENTS PERFORMED WITH SIMILAR TO 6  
 MEV P ARE INCLUDED. IT IS STUDIED TO WHAT EXTENT THE EXCITED CORE MODEL,  
 THE MOST OFTEN USED MODEL, IS SUITABLE FOR THE DESCRIPTION OF THE  
 NATURE OF LOW LEVELS OF ODD NUCLEI OCCURRING IN THE REGION OF A COMPLETE  
 FILLING OF THE 1D-2S SHELL. AT THE CENTER OF THE SUBSHELL 1D  
 SUBFIVEHALVES (PRIME23 NA, PRIME25 MG) WHERE THE DEFORMATION OF THE CORE  
 OF ODD NUCLEI IS LARGE THE INTERRELATION OF N OR VACANCY WITH THE CORE  
 IS NOT SO LARGE AS TO AFFECT THE CHARACTERISTIC FEATURES OF THE EXCITED  
 CORE MODEL. IN ODD NUCLEI OCCURRING AT THE END OF THE SUBSHELL 1D  
 SUBFIVEHALVES (PRIME27 AL) IN THE SUBSHELL 2S SUBONEHALF (PRIME29 SI,  
 PRIME31 P), AND AT THE BEGINNING OF THE SUBSHELL 1D SUBTHREEHALVES  
 (PRIME33 S, PRIME35 CL) THE INTERACTION OF THE PARTICLE OR VACANCY WITH  
 THE CORE GOVERNS THE APPEARANCE OF THE CHARACTERISTIC FEATURES OF THE  
 EXCITED CORE MODEL. IT OFFERS THE POSSIBILITY TO USE THE EXCITED CORE  
 MODEL FOR THE INVESTIGATION OF THE STRUCTURE OF THE EXCITED STATES OF  
 NUCLEI IN THIS REGION OF THE 1D-2S SHELL.  
 GOS. UNIV., LENINGRAD, USSR. FACILITY: LENINGRAD.

1/3 029 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--ANALYSIS OF THE ELASTIC AND INELASTIC SCATTERING OF 6-MEV PROTONS  
ON NUCLEI OF AVERAGE ATOMIC WEIGHT -U-  
AUTHOR--(05)-ANTROPOV, A.YE., VASILYEV, S.I., ZARUBIN, P.P., ORLOV, B.N.,  
PLAVKO, A.V.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 400-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--PROTON SCATTERING, ELASTIC SCATTERING, INELASTIC SCATTERING,  
WAVE MECHANICS, NUCLEAR MODEL, SPIN ORBIT COUPLING, NICKEL ISOTOPE,  
ANGULAR DISTRIBUTION, SCATTERING CROSS SECTION, COMPOUND NUCLEUS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1988/0245 STEP NO--UR/0048/70/034/002/0400/0408  
CIRC ACCESSION NO--AP0105320  
UNCLASSIFIED

2/3 029

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105320

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCATTER OF P WITH ENERGIES 3-20 MEV WAS STUDIED TO DET. LIMITS OF APPLICABILITY OF THE DISTORTED WAVE METHOD DURING THE P SCATTERING ON PRIME58 NEGATIVE64 NI NUCLEI, TO ELUCIDATE EXPTL. RESULTS ACHIEVED BY THE 6-MEV SCATTERING ON PRIME59 CO, PRIME58 NEGATIVE64 NI, PRIME63,65 CU NUCLEI BASED UPON 2 DISTORTED WAVE THEORIES AND THE HAUSER-FESCHBACK THEORY, NEGLECTING THE EFFECT OF INTERFERENCES BETWEEN DIRECT AND COMPD. SCATTERINGS. DURING THE APPLICATION OF THE OPTICAL MODEL AND THE DISTORTED WAVE MODEL, SPIN ORBITAL INTERACTIONS WERE NEGLECTED. WHEN CONSIDERING THE VOL. ABSORPTION ONLY, A MARKED DISAGREEMENT WAS FOUND BETWEEN EXPTL. AND THEORETICAL RESULTS IN DETG. THE ELASTIC SCATTERING CROSS SECTION. THE DESIRED RESULTS WERE ACHIEVED ONLY BY SELECTING SUITABLE PARAMETERS FOR THE OPTICAL MODEL. IN PRIME58,60 NI NUCLEI, A STRONG DEPENDENCE WAS VERIFIED FOR THE ANGLE DISTRIBUTION OF SCATTERED P ON THEIR ENERGIES. THE DISTORTED WAVE MODEL ALSO PROPERLY DESCRIBES THE INELASTIC SCATTERING OF 6-MEV P ON PRIME64 NI NUCLEI BY USING PARAMETERS OF THE OPTICAL POTENTIAL OBTAINED BY THE ANAL. OF THE ELASTIC SCATTERING. THE PRESENCE OF COMPD. PROCESSES WAS VERIFIED. THIS EFFECT MUST BE TAKEN INTO ACCOUNT BY VARYING PARAMETERS OF THE OPTICAL POTENTIAL. THE SHAPE OF THE ANGLE DISTRIBUTION FOR P WITH ENERGIES OF LARGER THAN 10 MEV REMAINS ESSENTIALLY UNCHANGED; HOWEVER, THE CROSS SECTIONS ARE STRONGLY INCREASED OWING TO WINGS OF A WIDE RESONANCE MAX. WHOSE FORMATION IS CONNECTED WITH AN ACTION OF THE COMPETITIVE P AND N CHANNELS DURING THE DECAY OF THE COMPD. NUCLEUS.

UNCLASSIFIED

3/3 029

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105320

ABSTRACT/EXTRACT--THE ANAL. OF THE INELASTIC SCATTERING BASED UPON THE  
HAUSSER-FESCHBACK THEORY SHOWED THAT FOR ACHIEVING DESIRED SPECTROSCOPIC  
DATA ONE HAS TO INCREASE THE PRECISION OF MEASUREMENT OF THE  
DIFFERENTIAL CROSS SECTIONS.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--ELASTIC AND INELASTIC SCATTERING OF PROTONS ON MAGNESIUM-24, AND  
MAGNESIUM-25, AND MAGNESIUM-26 -U-  
AUTHOR--(05)-ANTROPOV, A.YE., ZARUBIN, P.P., ORLOV, B.N., PLAVKO, A.V.,  
SOROKIN, A.I.  
COUNTRY OF INFO--USSR  
SOURCE--NAUK, SSSR, SER. FIZ. 1970, 34(1), 106-15  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ELASTIC SCATTERING, INELASTIC SCATTERING, PROTON SCATTERING,  
MAGNESIUM ISOTOPE, ANGULAR DISTRIBUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/0208

STEP NO--UR/0048/70/034/001/0106/0115

CIRC ACCESSION NO--AP0105284

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105284

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ANGULAR DISTRIBUTIONS OF THE ELASTIC AND INELASTIC SCATTERING OF THE P ON PRIME24 MG, PRIME25 MG AND PRIME26 MG NUCLEI WERE MEASURED FOR THE ENERGIES 5.84, 5.94, AND 6.03 MEV. ALL AVAILABLE DATA ABOUT THE SCATTERING OF P ON THESE NUCLEI WERE CLASSIFIED AND SYSTEMIZED IN ORDER TO EXPLAIN THE CONTRIBUTION OF VARIOUS MECHANISMS IN THE PROCESS OF THE ELASTIC AND INELASTIC SCATTERING. FACILITY: LENINGRAD. GOS. UNIV. LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr:

AP 0045529

Abstracting Service: 4-70

© BIOLOGICAL ABST.

Ref. Code:

UR 0455

80816v Kinetics of mass transfer during the fractional distillation of a methanol-ethanol-water mixture. Stefanovskaya, N. V.; Planovskii, A. N.; Orlov, B. N. (Mosk. Inst. Khim. Mashinostr., Moscow, USSR). Izv. Vses. Osn. Khim. Tekhnol. 1979, 4(1), 56-62 (Russ). Mass transfer was studied during the fractional distn. of a MeOH-EtOH-H<sub>2</sub>O mixt. on a 6-plate column, diam. 170 mm, at 1 atm. A thorough mixing of the liq. on 1 plate as well as the equil. between the liq. and the vapor at the phase interface were assumed. The mass-transfer coeff. (*k*) of an individual component did not depend on the concn. of other components. The inverse  $1/k$  depended linearly on the inverse of the slope of the resp. distn. line. Slopes of this linear dependence were the same for all components and in the whole concn. range.

Karel A. Hlavaty

MT

REEL/FRAME

19780497

7



USSR

UDC: 621.373:530.145.6

YELOV, V. V., IL'YASOV, R. Sh., MOROZOV, V. P., ORLOV, B. V., POL'SKIY, Yu. Ye.

"A Transistorized Oscillator for Excitation of a Ring-Type Gas Laser"

Tr. Kazan. aviats. in-ta (Works of the Kazan' Aviation Institute), 1970, vyp. 104, pp 116-122 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D199)

Translation: High-frequency pumping oscillators which operate in the 3-100 MHz frequency range are most frequently used for activating a gas laser. As a rule, these oscillators are based on vacuum tubes. With the development of Soviet high-frequency power transistors, it has become possible to make a miniaturized economic pumping oscillator. This paper describes a transistorized oscillator designed for excitation of three gas-discharge tubes on a frequency of 5 MHz with relative frequency instability of  $2 \times 10^{-4}$  with an output power of  $50 \times 3$  W, the time for reaching the working mode being no more than 50 msec. The gas laser emission level is stabilized by using negative feedback with respect to the emission of the laser. The power level for excitation of the gas-discharge tubes in a ring laser is continuously variable from  $P_{\max}$  to  $0.3 P_{\max}$ .

1/1

Hydraulic

USSR

UDC: 621.43

ORLOV, D. I.

"A Fluidic Step-by-Step Motor"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 31, Nov 71, Author's Certificate No 317810, Division F, filed 16 Feb 67, published 19 Oct 71, p 124

Translation: This Author's Certificate introduces: 1. A fluidic step-by-step motor which may be used in a pneumatic control system. The motor contains a housing with nozzles, and a rotor with radial vanes which is mounted in the housing. As a distinguishing feature of the patent, the control system is simplified by making the motor with at least three pairs of nozzles: one pair of identically directed nozzles connected to the air supply system, and two other pairs with oppositely directed nozzles connected to the control system through a switch. Dampers are made on the rotor in the form of radial projections. 2. A modification of this motor distinguished by the fact that an additional pair of identically directed nozzles is included for reversal.

1/2

1/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--CHANGE IN THE STRUCTURE OF POLYETHYLENE DURING WELDING -U-  
AUTHOR--(02)-ORLOV, E.B., VAKULA, V.L.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN. SER. B 1970, 12(2), 119-23  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--WELDING, POLYETHYLENE, POLYMER STRUCTURE, PLASTIC FILM,  
COHESION STRENGTH, MOLECULAR WEIGHT, X RAY DIFFRACTION STUDY, MICROSCOPY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1984/0947 STEP NO--UR/0460/70/012/002/0119/0123  
CIRC ACCESSION NO--AP0055645

UNCLASSIFIED

2/2. 027

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0055645

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WELDING OF POLYETHYLENE (I) FILMS GIVES SEAMS WHICH BREAK UNDER STRESS NOT AT THE ORIGINAL JOINT, BUT CLOSE TO IT (COHESION BREAKING). THE COHESION STRENGTH OF WELDS AT BREAK DECREASES WITH INCREASING MELT FLOW INDEX OF I, I.E., WITH THE DECREASE IN THE MOL. WT. X RAY DIFFRACTION AND I D. DETS. SHOWED THAT THE CRYSTALLINITY OF I DECREASES FROM 60-5PERCENT TO 58-9PERCENT AFTER WELDING. MICROSCOPY CONFIRMED AN INCREASE OF THE AMORPHOUS REGIONS AT, AND NEAR, THE WELD LOCATION.

UNCLASSIFIED

USSR

UDC 621.377.622.322.4 181.48 620.179.152

KARAL'NIK, N. A., ORLOV, G. N., et al.

"X-ray-Defectoscopy of Ferrite Plates for Memory Devices"

Elektron. Tekhnika. Nauch. - Tekhn. Sb. Microelektronika [Electronic Technology. Scientific-Technical Collection. Microelectronics], No 5 (26), 1970, pp 51-56 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B135 by TR)

Translation: A method is studied for x-ray defectoscopic testing of cast ferrite plates for memory units. Theoretically calculated and experimentally tested transmission modes for the RUP-22-20-5 x-ray device are presented for 2 standard sizes of plates made of 1.3 VT material. A graph of exposures is presented for ferrite plates up to 10 mm thick, allowing optimal modes of exposure to be selected for various flat ferrite parts. This method allows reduction of the % of rejection during the casting process and allows secondary utilization of the dross, thus increasing the economic effectiveness of group production of integrated ferrite memory elements. Recommendations are presented for application of the method for testing of various integrated ferrite elements. 4 figs, 3 biblio refs.

1/1

USSR

UDC 621.343.82(088.8)

ORLOV, I.N., TABORKO, N.I.

"Electroluminescent Image Converter"

USSR Author's Certificate No 263761, filed 31 May 68, published 24 June 70  
(from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No  
3B338P)

Translation: An electroluminescent image converter is proposed, in which, with the object of increasing the contrast, a layer of transparent dielectric is applied between the photoconductor layer and the electrode, and on the other side of the glass-metal disk with anisotropic conductivity a layer of material with nonlinear resistance is applied. N.S.

1/1

USSR

UDC 612.886

KISLYAKOV, V. A., and ORLOV, I. V., Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences, Leningrad

"Hydrodynamic Effects Among the Various Parts of the Vestibular Apparatus"

Moscow, Doklady Akademii Nauk SSSR, Vol 198, No 2, 1971, pp 479-482

Abstract: In an investigation of labyrinth function in the frog, the semi-circular canals and the utricle were stimulated by spot application of heat, and action potentials were recorded from individual nerve fibers of the vestibular nerve. Thermal stimulation of the lateral semicircular canal resulted in a greater number of action potentials conducted by nerve fibers originating in the lateral canal and fibers originating in the anterior canal. However, heat applied to the utricle resulted in excitation of anterior canal fibers but inhibition of lateral canal fibers. It was postulated that thermal stimulation of the lateral canal produces convection currents in the endolymph, which are utriculopetal in the lateral canal but utriculofugal in the anterior canal. Thermal stimulation of the utricle, on the other hand, induces convection currents which bend the cupulas in both canals away from the utricle.

1/1

USSR

UDC 669.01:621.78

BOL'SHAKOV, V. I., PIMAKHOV, D. P., ORLOV, L. G., TYLKIN, M. A., ZOTEYEV, V. S., and BORKOVSKIY, YU. Z.

"The Effect of Thermomechanical Treatment on the Impact Ductility, Crack Propagation, and Disintegration Viscosity"

Dnepropetrovsk, Metallurgicheskaya i Gornorudnaya Promyshlennost', No 4(82), Jul-Aug 73, p 32

Abstract: Results are presented of an investigation of the mechanical properties of 14Kh2GMR steel after the usual heat treated and after high-temperature thermomechanical treatment (HTMT). Tabulated repoint, relative elongation, relative contraction, fatigue limit, and impact ductility at various temperatures. HTMT was found to somewhat increase the strength characteristics of the steel. HTMT does not lower the plasticity, it substantially increases the impact strength at the expense of the increasing share of the work of crack propagation. The increase of structural strength of 14Kh2GMR steel by HTMT lasts up to a 650° C temper temperature. The creation of a stable substructure by hardening increases the resistance of the steel to brittle failure and decreases its susceptibility to stress concentrations. Two tables, four bibliographic references, 1/1



1/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--ELECTRON MICROSCOPIC STUDY OF THE DISLOCATION STRUCTURE OF INTERNAL  
AND SURFACE LAYERS OF DEFORMED SILICON IRON SINGLE CRYSTALS -U-  
AUTHOR--(02)-BOLSHAKOV, V.I., ORLOV, L.G.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TVERD. TELA 1970, 12(3), 745-51  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, PHYSICS  
TOPIC TAGS--ELECTRON MICROSCOPY, CRYSTAL DISLOCATION, METAL SINGLE  
CRYSTAL, IRON ALLOY, SILICON ALLOY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1995/1287 STEP NO--UR/0181/70/012/003/0745/0751  
CIRC ACCESSION NO--AP0116749  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

2/2 020

CIRC ACCESSION NO--AP0116749

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD HAS BEEN DEVELOPED FOR THE PROTECTION OF ONE SURFACE OF SINGLE CRYSTAL SPECIMENS OF THE ALLOY FE-3.2PERCENT SI DURING ELECTROCHEM. THINNING TO PREP. SPECIMENS FOR OBSERVATION BY TRANSMISSION ELECTRON MICROSCOPY. THE METHOD WAS USED FOR INVESTIGATING THE DISLOCATION STRUCTURE OF SLIP BANDS IN SURFACE AND INTERNAL LAYERS OF PLANE CRYSTALS 0.5 MM THICK (ORIENTATION OF THE BROAD FACE CLOSE TO (0 BAR 1 1)). THE SYSTEMS WITH MAX. STRESS WERE (BAR 2 31) (11 BAR 1) AND (BAR 1 21) (11 BAR 1). THE DISLOCATION STRUCTURES AT THE SURFACE AND IN THE VOL. OF THE CRYSTAL WERE QUITE DIFFERENT. IN THE LATTER CASE, STRONGLY TWINNED DISLOCATIONS WERE OBSD., WITH A LARGE NO. OF STEPS AND MANY PRISMATIC LOOPS, WHILE JUST UNDER THE SURFACE ALL THESE DETAILS WERE ABSENT AND DISLOCATIONS WERE FOUND EITHER IN THE FORM OF LONG AND STRAIGHT LINES ALONG THE TRACES OF THE SLIP PLANES OR IN THE FORM OF SHORT SECTIONS LOCATED OBLIQUELY TO THE SURFACE OF THE OBJECT AND ALONG THE TRACES (BAR 2 31) AND (BAR 1 21). DIFFERENCES IN THE STRUCTURE OF THE SURFACE AND THAT OF THE INSIDE LAYERS ARE EXPLAINED BY THE FACT THAT SLIP BEGINS AT THE SURFACE AND IS DEVELOPED INTO THE CRYSTAL, SINCE THE PECULIARITIES OF THE STRUCTURE OBSD. FOR THE INTERNAL LAYERS SHOULD PENETRATE ONLY AT SUFFICIENTLY LARGE DISLOCATION FREE PATHS.

FACILITY: TSENT. NAUCH.-ISSLED. INST. CHERNOI MET. IM. BARDINA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 621.378.33

ORLOV, A. I., ORLOV, I. N., RUBANOV, V. S., Institute of Physics, Academy of Sciences of the BSSR

"Effect Which Imperfection of the Cavity Elements Has on the Characteristics of a Triangular Ring Laser With Ninety-Degree Faraday Rotator"

Minsk, Doklady Akademii Nauk BSSR, Vol 16, No 5, May 72, pp 410-414

Abstract: The paper examines the influence of imprecise angle setting of the linear phase plate, instability of the magnetic field of the Faraday cell, and the presence of phase anisotropy of the mirrors on frequency splitting, azimuth, and nature of polarization of the opposed waves in a ring laser with isotropic cavity containing a ninety-degree Faraday rotator, a  $\frac{1}{2}$ -wave plate, and an arbitrary linear phase plate. It is shown that the actual errors in the elements of such a system do not distort its polarization-frequency characteristics.

1/1

USSR

UDC: 669.162.263.24:616

DOVGOPOL, V., Director, Ural Scientific Research Institute of Ferrous Metals;  
and ORLOV, N., Director, Sverdlovsk Scientific Research Institute for Health  
Resorts and Physiotherapy

"Utilization of Blast Furnace Slag Granulation Water For Medical Purposes"

Moscow, Metallurg, No 1, Jan 72, pp 44-45

Abstract: The effectiveness of production waste water spent by blast furnace slag granulation units with sulfides and residues of other mineral compounds for balneological therapy, is discussed. Data are presented on the basis of observations conducted by medical institutions for a period of years dating back to 1916. The results support the benefits of slag water therapy and the practicality of establishing hydrotherapeutic slag stations at metallurgical and cement plants equipped with slag granulation equipment. Examples are cited of such establishments which have been operated at various plants and provide successful treatment of a variety of disorders, including nervous system disorders, gynecological problems, occupational diseases, psoriasis, various arthritic disorders, etc. Recovery rates are cited. The high cost effectiveness of such treatments is also discussed.

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AA0040692

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Orlov, N. A. UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

240728 COMPARTMENT FURNACE intensifies the heat treatment operation in that each section of its gas distributor grid has independent headers to activate part of its lids or caps. The bottoms of the heating (1) and cooling (2) compartments comprise the grid sections (3) to support crushed corundum, firebrick etc, the first section grid (6) rather wider than those following so that the gas can burn well below the level of the wire passing through and provide enough heat to raise the metal to scale temperatures. The gas (short of air) burns and forms a de-oxidising medium, with additional air piped in (7) to finally burn off the gas above the wire level. When working small gauge wire, air preheated in the stove (10) is fed in through the grid caps. When working average gauge material, heat can be removed by the air cooling tube (11), whilst at heavy gauges a water-cooling tube can be inserted.

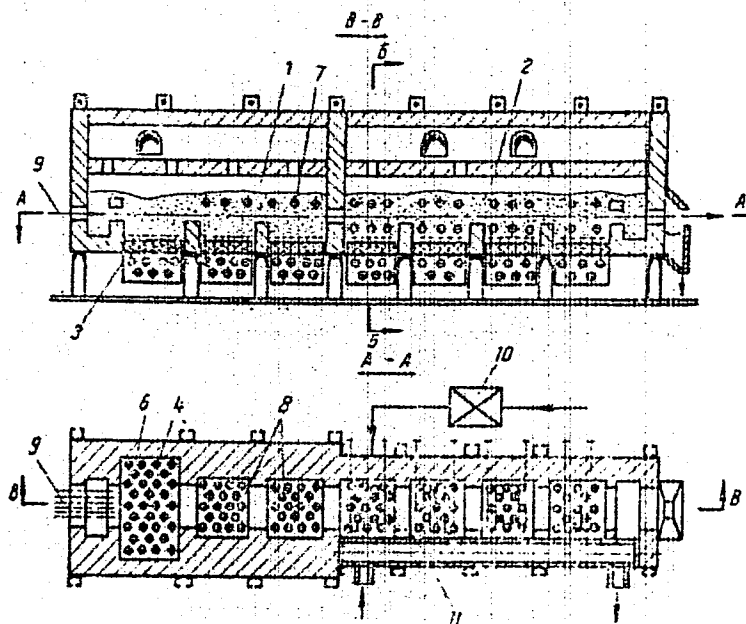
15.12.66 as 1120453/22-1.GUTOVSKII.B.P.et al(14.8.69)  
Bul 13/1.4.69. Class 18c, 31a<sup>1</sup>. Int.Cl.C21d, F27b.

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AUTHORS: Gutovskiy, B. P.; Orlov, N. A.; Berdichevskiy, A. M.;  
Baskakov, A. P.; Zubov, V. Ia.; Grachev, S. V.;  
Berg, B. V.; Zavarov, A. S.; Burkov, G. G.;  
Krasil'nikov, L. A.; and Sokolov, N. V.

19750312

$\frac{3}{3}$

USSR

UDC 547.245 + 543.422.4

D'YAKOV, V. M., VORONKOV, M. G., SIDORKIN, V. F., D'YAKOVA, T. L., and  
ORLOV, N. F., Irkutsk Institute of Organic Chemistry, Siberian Branch of  
the Academy of Sciences USSR

"PMR Spectra and the Structure of Trialkylsilyl Esters of Aroylphosphonic  
Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 7, Jul 73, pp 1535-1539

Abstract: PMR spectra of bis(triethylsilyl)aroylphosphonates --  
 $p\text{-XC}_6\text{H}_4\text{COP(=O)[OSi(C}_2\text{H}_5)_3]_2$  -- were studied. The data obtained from the  
PMR and IR-spectral analyses were compared with the calculated results  
of the distribution of electronic density by the method of SSP MO LKAO  
(PPP). No satisfactory correlation was observed between the chemical  
shifts of aromatic protons and the Hammett  $\sigma$ -constants in the investigated  
series of compounds. Anomalous behavior was noted for p-halogen substi-  
tuted derivatives for which a mechanism has been proposed for the reaction  
of the halogen substituent with the reactive center.

1/1



USSR

UDC 547.245

ORLOV, N. F., SLESAR', L. N., and SOROKIN, M. S., Leningrad Institute of the Textile and Light Industries imeni S. M. Kirov

"Thermal Conversions of Certain Triorganosilyl Derivatives of Phosphorous Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2585-2589

Abstract: The synthesis of triorganosilyl derivatives of phosphorous acid of type  $(R_3SiO)_n(RO)_{3-n}P$  ( $n = 1-3$ ) (I) is accompanied by side reactions, especially thermal conversions, which make the interpretation of data difficult.

The authors studied experimentally the thermal conversion of ethyltriethylsilyl phosphites.

It was found that with heating of diethyl triethylsilylphosphite at  $160^\circ$ , decomposition, disproportionation, isomerization and oxidation take place. On heating ethyl bis(triethylsilyl) phosphite, disproportionation and isomerization are observed. It was shown that under the experimental

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USSR

ORLOV, N. F., et al., Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2585-2589

conditions ethyl bis(triethylsilyl) phosphite is more resistant to thermal isomerization, but still more subject to isomerization than is diethyl triethylsilyl phosphite. Finally, in the process of heating tris(triorganosilyl) phosphites of the type  $(R_3SiO)_k(R_3'SiO)_{3-k}P$ , containing various different radicals and a silicon atom, disproportionation takes place in the triorganosiloxy groups.

2/2

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USSR

UDC 547.26'118'245.07

ORLOV, N. F., and DOLGOV, O. N.

"A Method of Making Alkyl Trialkylsilyl Phosphites or Bis-(Trialkylsilyl) Phosphites"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 35, Soviet Patent No 287015, class 12, filed 12 Aug 69, published 19 Nov 70, p 40

Translation: This Author's Certificate introduces a method of making alkyl trialkylsilyl phosphites or bis-(trialkylsilyl) phosphites by treated tri-alkylalkoxysilanes with esters of phosphorous acid with the application of heat and subsequent isolation of the product by conventional methods. As a distinguishing feature of the patent, the method is simplified and a wider range of raw materials is made available by using alkyl-(trialkylsilyl)- or bis-(trialkylsilyl) phosphites as the phosphorous acid esters. The patent also covers a method distinguished by the fact that the process is carried out at 50-200°C.

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USSR

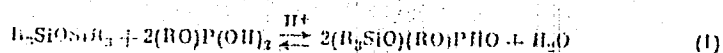
UDC 547.245

DOLGOV, O. N., VORONKOV, M. G., and ORLOV, N. F., Leningrad Institute of the Textile and Light Industry imeni S. M. Kirov

"Cleavage of Hexaalkyldisiloxanes by Monoalkyl Phosphites"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1667-1668

Abstract: It was found by the authors that hexaalkyldisiloxanes are cleaved by monoalkyl phosphites according to the general scheme



The reaction proceeded in the presence of protonic and aprotic acids ( $\text{H}_2\text{SO}_4$ ,  $\text{p-CH}_3\text{C}_6\text{H}_4\text{SO}_3\text{H}$ ,  $\text{ZnCl}_2$ ) provided there is continuous distilling off of the water that forms. It was suggested that the reaction was a stepwise process.

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1/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--ORGANOSILICON, PHOSPHORUS COMPOUNDS. REACTION OF BIS, TRIALKYLSILYL,  
PHOSPHITES WITH SULFUR -U-  
AUTHOR--(03)-ORLOV, N.F., SOROKIN, M.S., SHESTAKOV, YE.YE.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 711-12  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ORGANOSILICON COMPOUND, ALKYL PHOSPHITE, SULFUR, PHOSPHORUS  
SULFIDE, ORGANIC SYNTHESIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/0940 STEP NO--UR/0079/70/040/003/0711/0712  
CIRC ACCESSION NO--AP0124600

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124600

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEATING 22.6 G (ME SUB3 SIO) SUB2 PHD WITH 3.2 G S 7 HR AT 135-40DEGREES GAVE 53PERCENT (ME SUB3 SIO) SUB3 PS, B SUB1 79-80DEGREES, D PRIME20 0.9678, N PRIME20 SUBD 1.4350; SIMILARLY WAS PREPD. 41PERCENT (ET SUB3 SIO) SUB3 PS, B SUB1 159-60DEGREES, 0.9656, 1.4610. EVIDENTLY THESE ESTERS FORMED FROM INITIALLY FORMED (R SUB3 SIO) SUB2 P(S)OH WITH ELIMINATION OF (F SUB3 SIO)P(S)(OH) IN A FORM OF DISPROPORTIONATION. COMPS. AMONG THE TRIORGANOSILY DERIVS. OF P CONTG. ACIDS WITH A P-O-SI LINK HAVE ENHANCED REACTIVITY IN RESPECT TO NUCLEOPHILIC REAGENTS; HENCE, COMPS. WHICH AT THE SAME TIME CONTAIN THE P-O-SI GROUP AND THE HD GROUP ARE THERMALLY UNSTABLE AND UNDERGO FURTHER REACTIONS AT ELEVATED TEMPS. AS SHOWN HERE.

FACILITY: LENINGRAD. INST. TEKST. LEGK. PROM. IM. KIROVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--TRIORGANOSILYL DERIVATIVES OF PHENYLPHOSPHONOUS ACID -U-  
AUTHOR--(02)-ORLOV, N.F., BELOKRINITSKIY, M.A.  
COUNTRY OF INFO--USSR  
SOURCE--OBSSHCH. KHIM. 1970, 40(2), 504  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL SYNTHESIS, METAL CATALYST, NICKEL, PHOSPHATE ESTER,  
BENZENE DERIVATIVE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1992/1749 STEP NO--UR/0079/70/040/002/0504/0504  
CIRC ACCESSION NO--AP0112735  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112735

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. PHPO SUB2 H SUB2 REACTS WITH R SUB3 SIH IN THE PRESENCE OF NI CATALYST TO FORM THE CORRESPONDING MONO AND DI SUBSTITUTED ESTERS. REACTION OF 6.9 G MEET SUB2 SIH WITH 9.6 G PHPO SUB2 H SUB2 AND COLLOIDAL NI FROM 0.3 G NICL SUB2 GAVE, IN 2 HR AT 90-120DEGREES, 76PERCENT H AND 73.4PERCENT PHP(O)(OSIMEET SUB2)H, B SUB3 133DEGREES, D PRIME20 1.0388, N PRIME20 SUBD 1.4962. SIMILARLY WAS PREPD. 64.2PERCENT ET SUB3 SI ANALOG, B SUB4 154-60DEGREES, 1.0310, 1.4990; AND BU SUB3 SI ANALOG, 57.3PERCENT, BI SUB1, 162-30DEGREES, 0.9516, 1.4838. WITH 2 MOLES R SUB3 SIH THE REACTION GAVE 91.6PERCENT PHP(OSIET SUB3) SUB2 (I) B SUB2 144-70DEGREES, 0.9628, 1.4889; BU SUB3 ANALOG, 50.5PERCENT, B SUB2 190-10DEGREES, 0.9123, 1.4810. I HEATED WITH S IN HEPTANE 3 HR GAVE PHP(S)(OSIET SUB3) SUB2, B SUB2 169-72DEGREES, 1.0165, 1.5039. FACILITY: VSES. NAUCH.--ISSLED. INST. SIN.

KAUCH. IM. LEBEDEVA, LENINGRAD, USSR.

UNCLASSIFIED



USSR

UDC: 547.26'118

ORLOV, N. F., and BELOKRINITSKIY, M. A., All-Union Scientific Research  
Institute of Synthetic Rubber imeni S. V. Lebedev, Leningrad, State  
Committee for Chemistry USSR

"Triorganosilyl Derivatives of Phenylphosphonous Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, p 504

Abstract: Phenylphosphonous acid readily reacts with one or two moles of triorganosilane in the presence of catalytic quantities of colloidal nickel to give, respectively, triorganosilyl phenylphosphonite (I) and bis(triorganosilyl) phenylphosphonite (II). (I), in turn, reacts with triorganosilane to give (II). The interaction of (II) with sulfur takes place with self-heating and results in the formation of bis(triorganosilyl) phenylthiophosphonate.

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USSR

UDC: 547.245

D'YAKOV, V. M., MARMUR, L. Z., VORONKOV, M. G., ORLOV, N. F., Leningrad Institute of Light Industry and the Textile Industry imeni S. M. Kirov; Irkutsk Institute of Organic Chemistry, Siberian Department of the Academy of Sciences of the USSR; Leningrad Technological Institute imeni Lensovet

"Alcoholysis and Silanolysis of Trialkyl Silyl Derivatives of Phosphorous and Hypophosphorous Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1291-1295

Abstract: The authors investigated the alcoholysis and silanolysis of tris (trialkylsilyl) phosphites, bis(trialkylsilyl) phosphites, bis(trialkylsilyl) hypophosphites and trialkylsilyl hypophosphites. Alcoholysis of trialkylsilyl derivatives of phosphorus acids takes place with the formation of trialkylalkoxysilane and the corresponding acids or their partial trialkylsilyl derivatives. A silyl exchange reaction takes place when lower trialkylsilyl derivatives of a phosphorous acid are reacted with a higher trialkylsilanol. At the same time, under certain conditions, partial derivatives of phosphorous acid and hexaalkyldisiloxane are formed. Trialkyl phosphites and dialkyl phosphites did not react under the experimental conditions. Hydrolysis of trialkylsilyl derivatives of hypophosphorous acid yielded hypophosphorous acid and hexaalkyldisiloxane.

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USSR

UDC 541.124.542.938.547.1'118.547.1'128

D'YAKOV, V. M., VORONKOV, M. G., ORLOV, N. F., Irkutsk Institute of Organic Chemistry of the Siberian Department of the USSR Academy of Sciences and the Leningrad Technological Institute imeni Lensovet

"Mechanism of the Hydrolysis of Trialkylsilyl Esters of Phosphorus Oxy Acids"

Moscow, Izvestiya Akademii Nauk SSR -- Seriya Khimicheskaya, No 11, 1972, pp 2484-2488

Abstract: A study was made of the hydrolysis of the absolute and acid trialkylsilyl esters of phosphorus acids of the  $(R_3SiO)_3P$  and  $(R_3SiO)_2PHO$  type and aroylphosphonic acids of the  $XC_6H_4CNP(O)(OSiR_3)_2$  type (V. M. D'yakov, et al., Kremniyorganicheskiye materialy, Nauka, Leningrad, 139, 1971). In order to establish the hydrolysis mechanism  $H_2^{18}O$  with different contents of tagged oxygen was used. By the reaction with  $H_2^{18}O$  it was found that during neutral and acid hydrolysis of trialkylsilyl esters of the tri and quadruple-coordinated phosphorus atom there is predominant breaking of the Si-O bond in the P-O-Si and P(O)-O-Si groups. The experimental procedures and results are presented for the hydrolysis of tris(triethylsilyl)phosphite, bis(triethylsilyl)phosphite and bis(triethylsilyl)-o-methylbenzoylphosphonate. 14

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ORLOV, O. F.

JPRS 59675  
1 August 1973

THE THEORY OF ELECTROSTATIC SUSPENSION OF A SPHERE

[Article by L. Z. Boukov and O. F. Orlov, Moscow, *Elektrostatika*, Russian, No. 3, 1967, submitted 18 October 1965, pp 63-68]

UDC 537.21.621.319.01.001

The suspension of an uncharged conducting sphere in an electric field, produced by a system of electrodes surrounding it, in the absence of contact between the sphere and other bodies and media, is examined in this article. The concept of such suspension was developed in the late 1950's, in connection with the requirements for highly sensitive inertial navigation systems [1,2] and satellite stabilization systems [3].

In order to achieve this suspension, i.e. to insure the existence of an asymptotically stable equilibrium position of the center of the sphere in the coordinate system connected to the electrodes, it was necessary to regulate in some fashion the electrode potentials, starting at some reference potential, depending on the position and velocity of the center of the sphere in this coordinate system. The designs of suspension (geometry of the electrodes, their number, arrangement, dimensions, technical requirements on the elements etc.) and the general ideas on the choice of potential control law (resonance designs and designs with sphere attitude and velocity sensors, AC or DC), are discussed at length in published works pertaining to the development and application of the electrostatic suspension. In these publications, however, we were not able to find a satisfactory electrostatic posed in this article for determining the potential regulation law according to a given geometry of the system, required suspension rigidity and damping. The problem is solved for small displacements and velocities of the center of the sphere in the assumption of localization of the field in the electrode-sphere gap without consideration of boundary effects.

We will examine the 1-th electrode of the system and the nearby portion of the surface of the sphere as the plates of a capacitor with capacitance  $C$ , assuming here that the field is localized between these plates and that the boundary effects are insignificant. This assumption is valid if the gap is small in comparison with the linear dimensions of the electrodes

USSR

UDC: 8.74

KOVAL'CHUK, B. G., ORLOV, O. N.

"Use of COBOL in Problems of Formation of Search Files"

Nauch.-tekhn. Inform. Sb. Vses. In-t Nauch. i Tekhn. Inform [Scientific and Technical Information, Collection of All-union Institute for Scientific and Technical Information], 1972, Ser 2, No 4, pp 31-33 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V544, by the author)

Translation: The use of COBOL for programming of information search problems is studied. Procedures are described which realize the algorithm of formation of a search file with direct or reverse organization, examples of the structures and methods of description of files are presented. The advantage of an algorithmic language for programming of information logic problems is demonstrated.

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Semiconductors and Transistors

USSR

UDC 621.376

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DZEKHTSER, G. B., ORLOV, O. S.

"PIN Diodes in Wide-Band SHF Devices"

p-i-n diody v shirokopolosnykh ustroystvakh SVCh (cf. English above), Moscow, "Sov. radio," 1970, 200 pp, ill. 47 k. (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D355)

Translation: This book deals with one of the divisions of the rapidly growing field of SHF technology -- wide-band devices for controlling SHF power based on PIN diodes. SHF devices based on PIN diodes appeared in the early sixties and found extensive application in various fields of SHF technology: in radar and radio astronomy, radio measurements and automatic monitoring systems. Over the ensuing years, considerable theoretical and experimental material has been accumulated, and methods have been developed for designing and building wide-band devices based on PIN diodes. This material is the basis of the book. Consideration is given to the physical properties of PIN diodes, electrically controlled wide-band attenuators and modulators are analyzed and calculated, and a survey is given of the principal applications of wide-band SHF devices based on PIN diodes. Particular attention is devoted to nonstationary processes, and to the amplitude and phase-frequency characteristics of devices based on PIN diodes.

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DZEKHTSER, G. B., ORLOV, O. S., p-i-n diody v shirokopolosnykh ustroystvakh SVCh (cf. English above), Moscow, "Sov. radio," 1970, 200 pp, ill. 47 k. (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D355)

In addition to generalizing the results obtained by Soviet and non-Soviet researchers and developers, the book contains a number of works on wide-band devices based on PIN diodes and on the PIN diodes themselves. The book is written for engineers involved in the investigation, development and application of semiconductor devices in the SHF band, and also for scientific workers and students of colleges and universities in the corresponding fields. 109 illustrations, bibliography of 79 titles. Abstract

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USSR

UDC 621.318.56

ORLOV, O. V.

"Electromagnetic Relays"

USSR Author's Certificate No 296163, Filed 13/09/68, Published 4/05/71  
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, 1971, Abstract No 11 A25 P).

Translation: An electromagnetic relay containing two electromagnets is suggested. In order to increase reliability, it also contains two moving contacts, fastened to the armatures of the different electromagnets. The electromagnets are rotated with their armatures toward each other. 1 Figure.

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USSR

UDC 616.002-71-071

KUTIKOV, Ye. Sh., Lt Col Med Serv; ABUSHKEVICH, P. V., Lt Col  
Med Serv; ORLOV, O. V., Maj Med Serv

"Repeat Cases of Far Eastern Scarletina-Like Fever"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 9, Sep 71, pp 57-59

Abstract: In 1968 and 1969, a study was performed on 310 patients with Far Eastern scarlatina-like fever (FESF) who were admitted to the hospital from a collective where FESF outbreaks have occurred each year since 1962. Of these, 25 patients went through the disease twice and two patients three times, most of them within 10-12 months, and only three patients within 1 1/2 - 2 months. In these three patients, the second case of the disease was more severe than the first; in all others it assumed a lighter form. Fever of 37.7°C lasted 3 days on the average, while it was 38°C for 5.5 days in initial cases. The prodromal general malaise was less severe. Hyperemia of skin and mucous membranes and skin rash were less marked and of shorter duration. Changes in heart sounds were observed in four cases (initially in 12). Mild bradycardia and hypotension were observed equally frequently, but EKG 1/2

USSR

KUTIKOV, Ye. Sh., et al, Voyenno-Meditsinskiy Zhurnal, No 9, Sep 71, pp 57-59

changes were less frequent. Gastrointestinal disorders (anorexia, nausea, vomiting, and diarrhea) were less severe and lasted 4-7 days (initially 9-12 days). Bilirubin concentration in blood increased to 1.2 mg% (up to 1.67 mg% initially). Leukocytosis was less pronounced (10,000 versus 12,500). Serum autoagglutination tests were negative in 24 out of the 25 repeat patients. The impaired immunogenesis was probably due to the immediate administration of antibiotics at the onset of the first disease.

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USSR

UDC 591.524

SMIRIN, V. M., and ORLOV, O. Yu., Candidates of Biological Sciences, Moscow State University

"Signaling and Orientation Among Rodents"

Moscow, Priroda, No 5, May 71, pp 84-88

Abstract: The great gerbil (*Rhombomys opimus*), Brandt's vole (*Microtus brandti*), and the yellow steppe lemming (*Lagurus luteus*), which belong to the Cricetidae family, have characteristics in common with susliks and marmots, which are related to squirrels (*Sciuridae* family). These characteristics are unlike those exhibited by other species of gerbils, voles, and lemmings and are associated with the natural habitat of the animals in question, i.e., a flat terrain with sparse vegetation (dry steppes, semi-desert, and desert). The characteristics are of primary use to animals that are active in the daylight and consist of the ability to assume an upright position on the hind legs in surveying the landscape and watching for predators, and of warning other members of the colony of approaching danger by a special cry or by pounding on the ground with the hind legs. Because of the position of their eyes, which are located at the very top of the head, these rodents can watch the environment from vertical holes leading to their

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ORLOV, P.B.

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6-73

X-ray STUDY OF THE DISTRIBUTION OF ADMIXTURES IN THIN EPITAXIAL SEMICONDUCTOR LAYERS BY THE ION MICROANALYSIS METHOD

[Article by P. B. Orlov, F. A. Gine'laro, V. M. Filin, Moscow: Novosti, 111 Sovetskoye Prosvetleniye, Moscow: Sinetskaya Poluprovodnikovaya Kibernetika, 1972, p. 133]

The method of ion microanalysis was used to study the distribution of the acceptor admixtures of the IIIb subgroup of the periodic system in silicon layers less than 5 microns thick obtained by gas epitaxy and the distribution of amphoteric admixtures of sub-group IVb in thin layers of GaAs and GaAl<sub>0.5</sub>As. In the example of these specimens, the possibilities of using the secondary ion emission spectra to investigate the distribution laws of the admixtures with respect to depth of the thin layers with a resolution of 100 Å are demonstrated. The effect of the crystallization conditions and the type of allowing admixtures on the shape of the concentration profiles and also on the electrical properties of the silicon epitaxial layers and on the luminescent properties of the epitaxial layers of GaAs and GaAl<sub>0.5</sub>As is demonstrated.

USSR

UDC 621.923.04

ORLOV, P. N., UKRAINSKIY, YU. M., GALKIN, B. D. and SKVORTSOV, K. F.

"The Character of the Surface Layer of Gallium Arsenide After Abrasive Grinding"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Mashinstroyeniye, No 4, 1973, pp 158-161

Abstract: The influence of the process dynamics of the grinding used in preparing layers of gallium arsenide on the depth of the disturbed layer is considered. Using electron diffraction it was concluded that in order to increase productivity it is necessary to use high speeds and acceleration of the grinder on the foundation. On the other hand, in order to obtain a minimal disturbed layer for final polishing low speeds and minimal acceleration are required. These effects are due to the influence of plastic deformation on the process.

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USSR

UDC 621.375.82

AKHMANOV, S. A., ORLOV, R. Yu., SKIDAN, I. B., TELEGIN, L. S.

"Picosecond Pulses in the Ultraviolet Band"

V sb. Nelineyn. protsessy v optika. (Nonlinear Processes in Optics-- collection of works), Vyp. 2, Novosibirsk, 1972, pp 27-34 (from RZh-Fizika, No 12, Dec 72, Abstract No 21D869)

Translation: An experimental study was made of self-focusing and induced Raman emission in liquid nitrogen of picosecond radiation pulses with a power to  $10^7$  watts and a mean wavelength of  $\lambda = 0.26$  microns. The pulses are obtained as a result of transformation of the radiation generated by a neodymium glass laser in the synchronization mode into the fourth harmonic. The laser radiation comprised 15-20 pulses 3-4 picoseconds in duration with a power of  $3 \cdot 10^9$  watts. The efficiency of conversion into the fourth harmonic in the system made up of the generator with a core 24 cm long and 2 series frequency doublers was 1-2%. The high-power stability of the fourth harmonic was noted. This was achieved with difficulty in the nanosecond pulse mode. The induced Raman emission threshold was reached for a fourth harmonic pulse power of  $10^6$  watts. The self-focusing and anomalous broadening of the pulse spectrum, the mechanism of which has been inadequately investigated, were also observed in a number of experiments. The bibliography has 9 entries.

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AKHMANOV, S. A., ORLOV, R. Yu., SKIDAN, I. B., and TELEGIN, L. S.

"Formation of Subpicosecond Pulses in the Ultraviolet Range by Multiple Nonlinear Transformations"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 16, No 8, 20 October 1972, pp 471-475

Abstract: This article describes an oscillator of ultrashort pulses in the wavelength range of 0.26 to 0.28 microns, with the pulses having a width of less than  $0.5 \cdot 10^{-12}$  seconds and a power of approximately 10 MW. To generate these pulses, the radiation frequency of a picosecond laser using glass with  $\text{Nd}^{3+}$  was twice doubled. The basic advantage of the method described in this letter is the improvement in the pulse-train structure that can be achieved in the process of multiple nonlinear transformations. A diagram of the experimental apparatus consisting of a picosecond pulse oscillator using LGS-1 glass and two frequency doublers, is given. The pulses thus produced can be used as pumping sources for ultraviolet lasers for determining the relaxation time of electronic levels and for investigating nonstationary, nonlinear effects. The authors are connected with the M. V. Lomonosov State University of Moscow.

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USSR

ORLOV, S. D., Uporyadochennyye mnozhestva i reshetki, No 1, 1971, pp 66-73

For infinite, distributive lattice  $L$ , the problem of the natural generalization of the equivalency concept for the case of  $L$  ratios, proposed by the reviewer (Lectures on Lattice Theory, Saratov, 1970), is solved. In particular,  $\varepsilon \in P_L(A \times A)$  is said to be an  $L$  ratio of equivalence if: 1)  $\varepsilon(a, a) \neq 0$  for each  $a \in A$ ; 2)  $\varepsilon^{-1} = \varepsilon$ ; 3)  $\varepsilon \circ \varepsilon = \varepsilon$ . For  $L = \{0, 1\}$ , indicators of ordinary equivalency are obtained. The totality of nonzero  $L$  sets  $(a_i)_{i \in I}$  is said to be a subdivision of the  $L$ -set  $a$  if, for any  $a \in A$ ,  $\bigvee_{i \in I} a_i(a) = a(a)$  and  $a_i(a) \wedge a_j(a) = 0$ , where  $i \neq j$ . There exists a mutual, single-valued correspondence between the subdivisions of the given  $L$ -set  $a$  and the  $L$  equivalencies  $\varepsilon$  such that  $\varepsilon(a, a) = a(a)$  for every  $a \in A$ . It is shown, in general, that all the most important characteristics of equivalency are preserved in this generalization. V. Saliy

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USSR

UDC: 512.7

ORLOV, S. D.

"L Ratios of Equivalence"

Saratov, V sb. "Uporyadochennyye mnozhestva i reshetki" (Ordered Sets and Lattices --collection of works) No 1, Saratov University, 1971, pp 66-73 (from RZh--Matematika, No 4, 1972, Abstract No 4A339)

Translation: The binary L ratio for the set A (RZh-Mat, 1965, 8A188) is the mapping of  $f: A \times A \rightarrow L$ . The totality of all binary L ratios for set A is here designated as  $P_L(A \times A)$ . The product of the binary L ratios  $f_1, f_2 \in P_L(A \times A)$  is  $f_2 \circ f_1 \in P_L(A \times A)$ , such that  $f_2 \circ f_1(a_1, a_2) = \bigvee (f_1(a_1, a) \wedge f_2(a, a_2))$  for any  $a_1, a_2 \in A$ . To each  $f \in P_L(A \times A)$ , its inverse  $f^{-1} \in P_L(A \times A)$  is compared, while  $f^{-1}(a_1, a_2) = f(a_1, a_2)$  for  $a_1, a_2 \in A$ . The mappings  $Q: A \rightarrow L$  are known as L sets over A.

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USSR

UDC 632.95

ORLOV, S. I., ZAVIZION, L. P., and PYATNOVA, Yu. B.

"Determination of Admixtures in Dithiocarbamate Derivatives by Thin-Layer Chromatography"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of works), No 3, Moscow, 1973, pp 136-138 (from RZh-Khimiya, No 22, 25 Nov 73, Abstract No 22N551 by G. A. Kosminskaya)

Translation: To identify ethylenedithiocarbamate (EDTC) derivatives by thin-layer chromatography, silicic acid was used as a sorbent and EtOH+CHCl<sub>3</sub>(1:16.5) as solvents to separate the components. The EDTC derivatives contained ethylenethiourea, ethylenethiuram-monosulfide, ethylenethiuram-disulfide, S, and 2 unidentified substances. The admixtures detected were of the original substance - NH<sub>4</sub> salt of EDTC.

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USSR

UDC 632.95

MEL'NIKOV, N. N., SOKOLOVA, YE. M., TRUKOV, P. P., VOLKOVICH, S. D.,  
DYMSHAKOVA, G. M., GOLYSHIN, N. M., ABELANTSEV, V. I., URSULINIS, N. S.,  
FEDOSEYENKO, L. G., ZAIKIN, B. A., DVURICHENSTOV, M. G., VISHEVETSKAYA, A. K.,  
ORLOV, S. I., ZAVIZION, A. P., and TALASH, A. I.

"Polycarbazin"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 95-104 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N503 by T. A. Belyayeva)

Translation: The effectiveness of polycarbazin (I) on apple scab and grape-vine mildew equals that of zineb (II) and polyram-combi, while on cherry-fruit gray rot it equals Bordeaux liquid (III) (1 percent), but is ahead of II. I equals II and III for Clasterosporium infection of the cherry plum and tomato macrosporiosis. The decisive factor which determine the length of action of I is precipitation, which washes the preparation off plants.

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USSR

UDC 621.372.413(02)

ORLOV, S. I.

Raschet i konstruirovaniye koaksialnykh rezonatorov (Calculation and Design of Coaxial Resonators), Moscow, Soviet Radio Press, 1970, 253 pp (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8B157)

Translation: This article contains a discussion of the problems of calculating and designing band coaxial resonators. The basic attention is given to resonators with capacitive frequency tuning. Calculation of the electrical parameters (resonance frequency, resonance resistance and characteristic Q-factor) is carried out by the impedance method permitting establishment of the dependence of these parameters on the characteristic and geometric dimensions of the resonators and, in particular, solution of the problem of optimal emissions. The properties of the resonator with various methods of inclusion of the variable frequency tuning capacitors are analyzed. Problems of coupling the coaxial resonator to load in the frequency band are investigated. Recommendations are given on structural execution of the resonators and their elements. There are 137 illustrations, 17 tables and a 27-entry bibliography.

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